



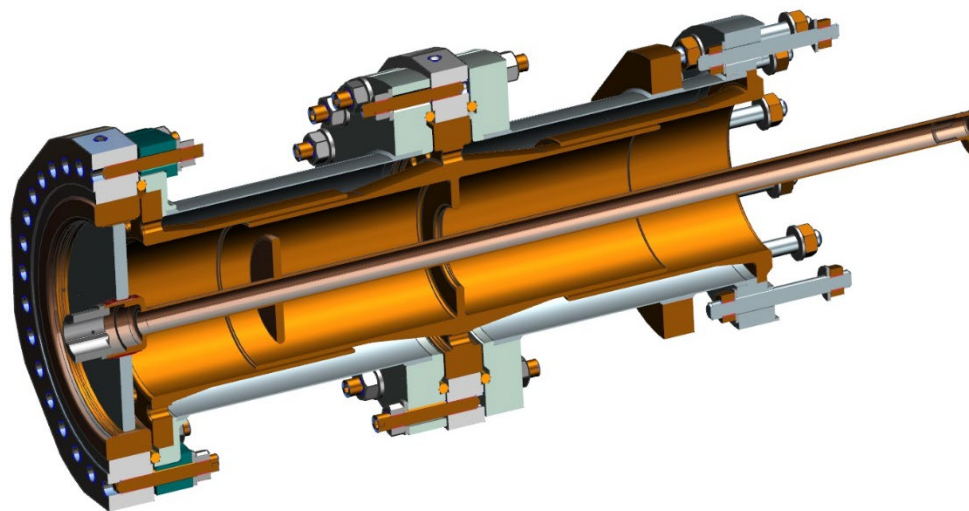
Fermi National Accelerator Laboratory
P.O. Box 500 - Batavia, Illinois - 60510

Fermilab Performance Acceptance Test Report
650 MHz EM Shielded Coupler Vacuum End Cleanroom
Particle Acceptance Test Report
ED0008448, Rev. -

Rev.	Date	Description	Originated By	Checked By	Approved By
-	17 OCT 18	Initial Release	<i>S. Kazakov</i>		

Introduction

Configuration of new design of PIP-II main 650 MHz coupler includes electromagnetic shields with narrow gaps and chambers between them and outer shell, Pic.1. Assembling will be done with Teflon jig which is contacting with electromagnetic shields and moves. It can generate particles which potentially can contaminate superconductive cavity during assembling procedure. It was decided to perform testing assembling to check applicability of new configuration for superconducting cavities.



Picture 1: Configuration of new design of PIP-II main 650 MHz coupler, vacuum part.

Test assembling.

The outer conductor of new 650 MHz coupler was assembling in clean room, Pic.3 – Pic.6. The goal of the test was to study how many particles are generated during assembling procedure and understand whether the new design can be used for superconductive applications.

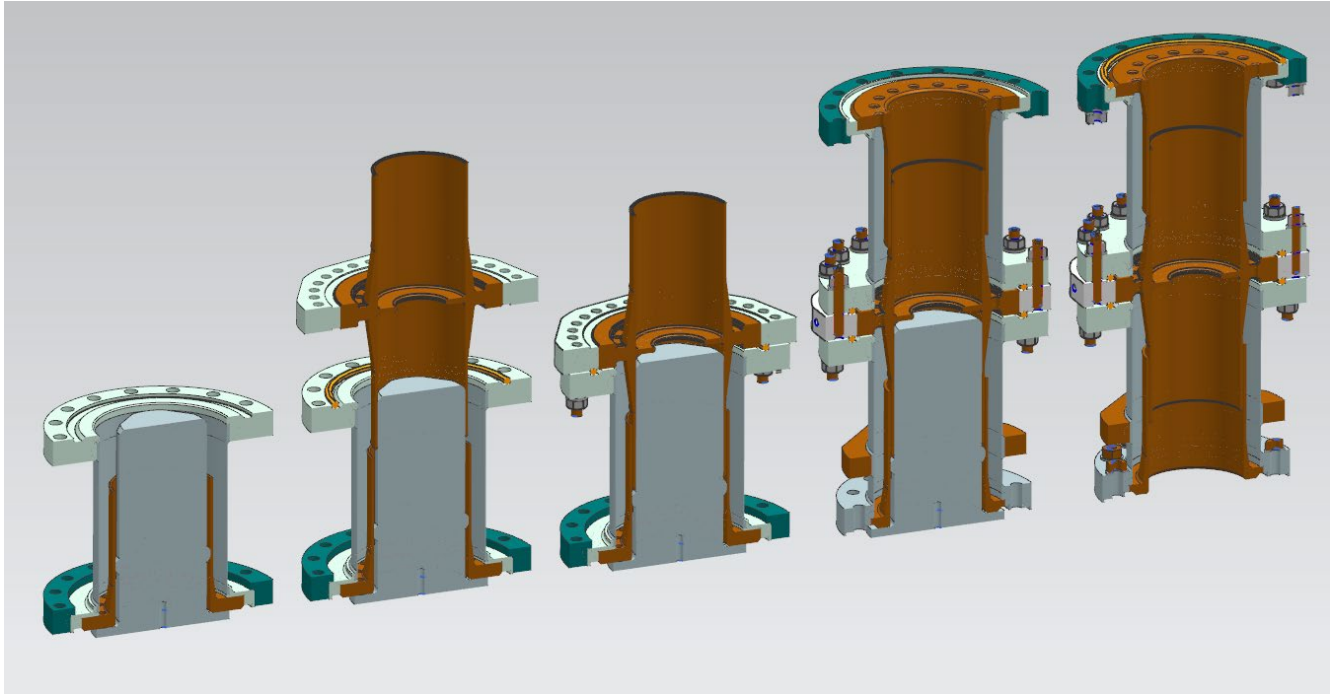
The Teflon insert (TI) was used keep axial symmetry during assembling, Pic. 2.

First it was checked how many particles was generated by inserting TI inside the copper parts. TI was inserted in to parts and removed. Numbers of generated particle were read at particle counter. Numbers of particle were a few, ~3 ~5.

Then parts were cleaned by flow of nitrogen and number of particles became zero. Cleaning was fast and easy.

Then full assembling was performed with intermediate cleaning of assembled parts by nitrogen flow. After final assembling the practical counting was performed. Number of particles was indicated as zero

Conclusions:
New configurations can be assembled 'particle free' and it can be used for superconductive applications.



Picture 2: Assembly sequence with Teflon insert.



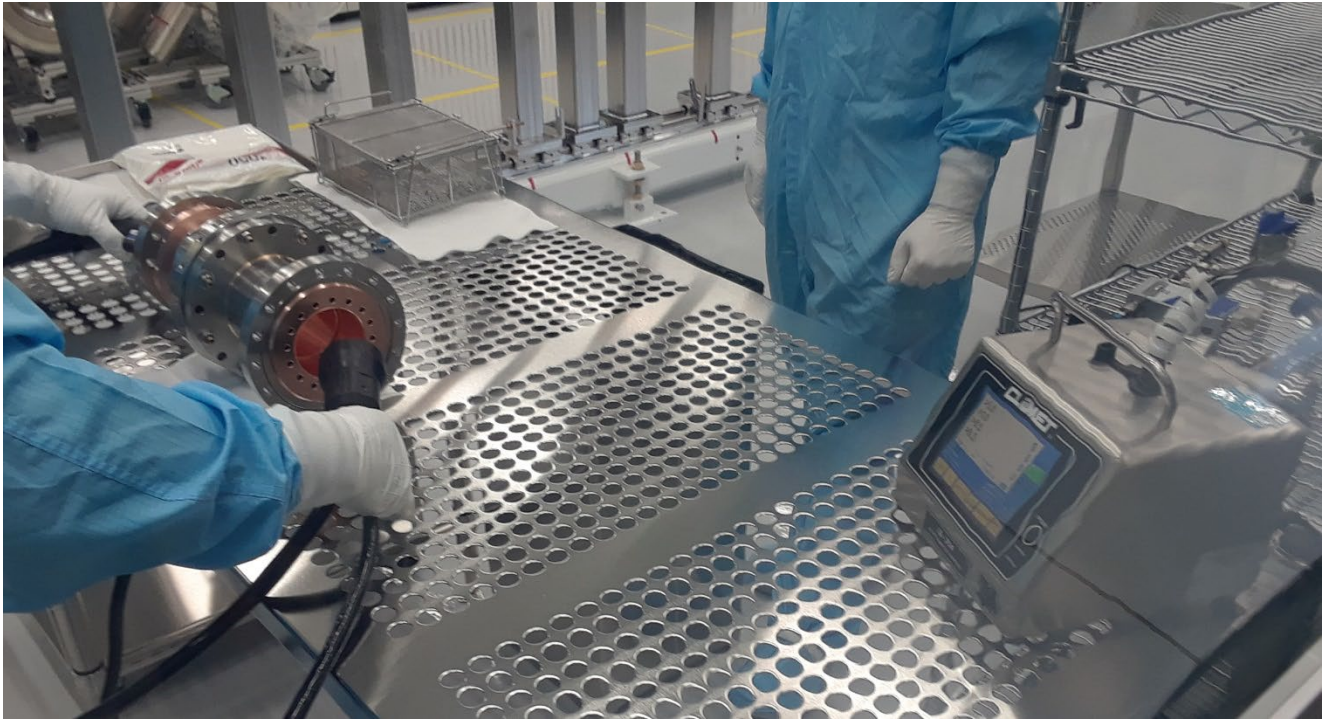
Picture 3: Clearing parts by flow of Nitrogen before assembling and assembling.



Picture 4: Intermediate test for particles. Zero number of particles on the counter screen.



Picture 5: Further assembling



Picture 6: Test of full assembly of outer conductor for particles. Counter indicates zero number of particles.